

ABSTRACT

An energy storage device for powering a downhole tool may be heated to an effective temperature to improve the operability of the energy storage device. The energy storage device may comprise, for example, a primary battery, a secondary battery, a fuel cell, a capacitor, or combinations thereof. The effective temperature to which the energy storage device is heated may be greater than an ambient temperature in the wellbore near the energy storage device. The energy storage device may be heated using various heat sources such as an ohmic resistive heater, a heat pump, an exothermic reaction, a power generator, a heat transfer medium, the energy storage device itself, a downhole tool, or combinations thereof. A thermal conductor may extend between the heat source and the energy storage device. Further, a thermal insulator may at least partially surround the heat source and the energy storage device.